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West Side Highway Project
Summary of Alternatives

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Introduction

This report is a summary of the five West Side Highway Project alternatives and their probable impacts which are presented in the West Side Highway Project Draft Environmental Impact Statement of April 25, 1974 The information presented is designed to familiarize the general public with the basic choices and their effects Public hearings are scheduled for four separate occasions—June 20th and 27th, and September 5th and 12th, 1974.

Although no final decision will be made at the hearings, both oral and written statements are encouraged and will be made part of the record. Written statements may also be mailed directly to the West Side Highway Project, 19 Rector Street, New York, New York 10006. All statements received before October 28, 1974, will be included in the record.

The Highway

When the highway was built in the 1930's, it was admirably suited to its purpose and location. It was carefully fitted between the warehouses and manufacturing buildings on the east and the headhouses of the piers on the west. Its elevated structure allowed vehicles to pass underneath between the piers and the warehouse and manufacturing areas

Forty years later, the inadequacies of the existing highway had become readily apparent and widely recognized. The narrow ramps, sharp curves, left-handed entrances and exits, and a crumbling roadbed posed serious hazards

The critical condition of the highway was dramatically demonstrated last December by the major collapse of a large section of the northbound roadway south of 14th Street. This collapse, and a subsequent inspection of the elevated structure, necessitated the complete closing of the West Side Highway, between the Battery and 46th Street, for an indefinite period

Background and Organization

The designation of an Interstate Highway System link on the West Side of Manhattan by the United States Department of Transportation in 1971 provided the initial mechanism and funding necessary for such a comprehensive transportation planning effort Originally, the State of New York had requested such a designation between the Brooklyn-Battery Tunnel and the George Washington Bridge. By law. Federal Interstate routes must constitute system components, connecting one Interstate highway with another The only practical West Side connections were the Brooklyn-Battery Tunnel at the southerly tip of the Island and either the George Washington Bridge at 178th Street or the Lincoln Tunnel at 42nd Street However, the New York State Legislature in 1971 enacted a law which had the effect of barring construction of any new Interstate highway within Riverside Park, north of 72nd Street. As a result, the Federal Highway Administration designated as an Interstate Route only that area from the Brooklyn-Battery Tunnel to the Lincoln Tunnel at Midtown, refusing designation north to the Bridge on the basis of the New York State statutory restriction. Consequently, 90 percent Federal funding was made available only for studying a corridor on the West Side between the Battery and Midtown.

It was recognized by the City and the State that the organization and conduct of such an undertaking would require their mutual agreement and ongoing cooperation. To that end, in December of 1971, Governor Nelson A Rockefeller and Mayor John V Lindsay signed an unusual Memorandum of Understanding, which established the organizational and policy framework for a "West Side Highway Project"

The Memorandum created a "Steering Committee" as the Project s policy-making body This 20-member group initially included the heads of 16 City and State agencies concerned with planning and transportation, and the Chairpersons of Manhattan Community Boards One, Two, Four and Seven, representing Community Planning Districts One, Two, Four and Seven, which together encompass the West Side of Manhattan from the Battery well into the Riverside Park area Subsequently, in August, 1973, the membership of the Steering Committee was increased to 22 by the addition of the Chairpersons of Community Board Nine and Twelve, extending the area represented to the George Washington Bridge.

In addition to providing policy direction for the Project, the Steering Committee recognized that a smaller group, composed of persons whose responsibilities bore most directly on the Project decisions, would be desirable for closer supervision of Project planning This group was formed as the Working Committee Like the Steering Committee, it was chaired by the New York State Commissioner of Transportation, Raymond T. Schuler.

Community Participation and Public Information

From the outset of the Project, and actually before the planning effort was underway, a comprehensive community participation program was operating The Steering Committee established this "Community Liaison and Public Information Program" in order to afford people who might be affected the opportunity to be informed and to participate in the Project The Memorandum of Understanding and the Federal Highway Act contained the mandates for establishing the program, and the Policy Statement of the Steering Committee set forth the specific goals and policies which governed it.

To date, the staff has held well over 400 briefings, presentations and working sessions with community organizations—some whose concerns are localized, such as block association or merchant groups, others whose interests are more general and wide ranging.

In addition, there have been at least as many informal conversations between staff members and people representing particular public or private interests

Finally, an "open file" has been maintained throughout the Project. All Project documents, work programs, progress reports, memoranda, records of community meetings and other material related to the Project's administration, planning and design work are available to all interested parties at the West Side Highway Project office, 19 Rector Street, New York New York 10006.

Policies and Objectives

In August 1972, the Steering Committee formally adopted a policy statement as a basis for all planning and design activities associated with the West Side Highway Project

In this document, the Steering Committee recognized the opportunity to combine major land use planning with transportation planning in an effort to provide solutions to the following major problems:

1. **Obsolescence and under-utilization of the waterfront area.**
2. **Insufficient employment opportunities.**
3. **Insufficient land area available for critical land uses.**
4. **Continuing degradation of the physical environment.**
5. **Excessive cost of goods movement and distribution.**
6. **Inadequate transportation systems.**

To frame a response to the problems cited above, five broad goals were identified by the Steering Committee:

A. **Assure that the alternative corridor plans meaningfully respond to the needs and aspirations of individuals and organizations affected by reconstruction of the Highway; the quality of the various alternatives will be dependent upon intimate awareness of these factors.**

B. **Minimize disruption, dislocation, and other social and economic costs which may occur from reconstructing the highway.**

C. **Achieve desirable physical and economic use of the West Side waterfront corridor.**

D. **Improve the quality of the physical environment by reducing pollution attributable to transportation sources in the West Side corridor.**

E. **Improve the efficiency and quality of moving people and goods to and from Manhattan, especially within the West Side corridor.**

The policy framework within which the Steering Committee set out to accomplish the goals cited above was delineated in 34 policy statements [1] These policy statements formed the basic guidelines for the planning process

[1] **Policy Statement of the Steering Committee**, West Side Highway Project Report No 2 01, August 1972

The Steering Committee met periodically during the West Side Highway Project

Photo/The New York Times

The Planning Process

The diversity of goals and policy statements recognized by the Steering Committee indicates the complexity of problems associated with the Project. In order to accommodate this complexity and to arrive at workable proposals, a clearly defined planning methodology was formulated. It was decided that all alternative highway plans would be developed and evaluated as an integrated collection of transportation and land use elements, referred to in combination as "program packages"

Each program package was conceived initially by the local area planners, in order to maintain consistency between local goals and objectives and Project planning criteria. This level of review was continued as the range of possible alternatives narrowed and the scope of each program package expanded with additional inputs of detailed technical information. After continuous dialogue between Project staff, local communities and government agencies, five program packages have been refined and evaluated for presentation in this report and at public hearing.

During this process, major public and private functions and facilities in the corridor area were analyzed in particular, and the results were integrated into the planning process for generation of alternative proposals. These included the three public projects presently planned or underway in the area, which were cited expressly in the Memorandum of Understanding:

1. **Battery Park City** A new 100-acre community adjacent to the World Trade Center, consisting of residential, commercial and civic facilities.

2. **Consolidated Passenger Ship Terminal** Extensive rebuilding of three piers located between West 48th Street and West 52nd Street to serve as passenger facilities for cruise ships.

3. **New York City Convention and Exhibition Center** Proposed as one of the largest such facilities in the nation, to be built over the Hudson River between 44th and 47th Streets

Project planning began with the identification of a wide range of preliminary alignments, formulating initial concepts and meeting with public agencies and community groups. The Project staff focused its attention on analyzing land-use trends, traffic patterns, environmental conditions, the potential for public transportation and the socioeconomic characteristics of the corridor. Subsequently, preliminary program package alternatives were outlined, evaluated, and presented to the Steering Committee for their review. Seven alternatives were then selected by the Committee for more detailed study.

Then, the content and design for the selected alternatives were further detailed and refined by the staff. As a result, two of these seven alternatives were eliminated from further consideration. Finally, the five selected alternatives were evaluated in environmental, social and economic terms, in order to determine their impacts, advantages and disadvantages. This is the stage which involved preparation of a Draft Environmental Impact Statement, and will include presentation of the Project alternatives at public hearing. After the hearing, the Project will respond to comments and criticisms of interested people and agencies, prior to recommendation of any alternative.

Development of Project Alternatives

The five alternative proposals which are described in this report represent a wide range of possible actions on the West Side of Manhattan, each centered around a different proposed transportation facility to serve the area in place of the existing West Side Highway. The range of alternatives extends from little or no change in existing conditions within the Study Corridor, to ambitious proposals for transportation and waterfront development which could transform the West Side of Manhattan over the next quarter century.

The alternative proposals would provide different levels of transportation service, and include various combinations of public transit and highway facilities. Different development opportunities, some of which could be carried out directly as part of the transportation project, would arise with the implementation of each proposal. And, importantly, the alternatives would provide significantly different incentives for the preservation, development or redevelopment of adjacent areas and activities in the Study Corridor.

These five alternatives are the products of an intensive process of analysis and deliberation. The goals, objectives and policy considerations developed at the beginning of the Project, along with legal and administrative requirements and physical constraints, provided the bases for the planning process and the initial development of alternatives. Starting with 17 theoretical locations for a replacement of the existing West Side Highway, the number was gradually reduced during several phases of the Project to the ones presented here. These represent real and significant choices among alternatives which would produce significantly different effects, as measured against the policies of the Project Steering Committee, and the goals and objectives of West Side Community Boards.

Thus, five program package alternatives, utilizing two basic transportation rights-of-way, were finalized and evaluated for presentation at public hearing:

■ **Maintenance** The existing West Side Highway would be repaired and maintained as an operating facility. This assumes preservation of existing Study Corridor facilities and little or no influence on the future growth or development of the West Side.

■ **Reconstruction** This would involve partial reconstruction of the existing West Side Highway in order to correct major structural deficiencies, making the road safer and permitting trucks to use the facility. It assumes preservation of existing Study Corridor facilities and little or no influence on the future growth or development of the West Side.

■ **Arterial** This would entail tearing down the existing West Side Highway, and replacing it with an at-grade arterial roadway of lower traffic capacity and a depressed public transitway facility. It assumes preservation of existing Study Corridor facilities. It further assumes moderate stimulation of current redevelopment trends on the West Side, with future growth concentrated in relation to key elements of the transportation proposal.

■ **Inboard** This also would entail tearing down the existing West Side Highway, but would replace it with a six-lane interstate facility with a public transitway in the median. This assumes preservation of existing viable waterfront uses, minimal disruption of existing conditions, and some limited potential for net growth on the West Side.

■ **Outboard** This too would involve tearing down the existing West Side Highway. It would be replaced by a six-lane interstate facility constructed in landfill and covered in sections near the pierhead line, with an adjacent public transitway and a reconstructed West Street-Twelfth Avenue. It assumes that present waterfront facilities south of 42nd Street have no economic future, and that they should be displaced with landfill to accommodate new viable uses, primarily housing and recreation. It also assumes moderate levels of future growth and major economic revival of the West Side.

These five alternatives are described in the following pages against a background of rapidly changing circumstances. After a section of the existing West Side Highway collapsed in December 1973, additional structural deficiencies were detected throughout its length. Except for the section between 46th and 72nd Streets in Midtown, the Highway was subsequently closed for an indefinite period from 79th Street to the Battery. These circumstances have inevitably necessitated some alteration of specific components of each program package, notably implementation and financial aspects. Where such changes have been evaluated at this time, they are noted in the following description of alternatives, and are discussed in the probable impacts of the alternatives.

Maintenance Alternative

Under this alternative, the existing West Side Highway would be repaired and reopened, and then serviced with continued periodic maintenance. Repairs and maintenance would be conducted in the area from the Brooklyn-Battery Tunnel in Lower Manhattan to 72nd Street, where the facility connects with the Henry Hudson Parkway. It should be noted that one or more sections of the Parkway north of 72nd Street also are seriously deteriorated, but there is no attempt in this document to describe such conditions or methods of maintenance beyond the limits of this Project.

Initially, the Maintenance alternative was conceived as a program of routine maintenance, conducted on a regular or continuous basis, in order to ensure the continued operation of the existing West Side Highway, which had been carrying traffic since the 1930's. That is, no action would be taken other than for the City to continue its normal maintenance of the existing West Side Highway for the next 20 to 25 years. Such maintenance would consist of routine repairs to the deck and supporting structure of the roadway between the Brooklyn-Battery Tunnel and 72nd Street. Such a maintenance program would keep the facility operating until 1995 in the condition and manner that it operated in 1972, at the outset of the Project.

However, during the period of the planning activities of this Project, the changing conditions of the existing West Side Highway required that the City close it down entirely south of 46th Street for an indefinite period. On December 15, 1973, just a few months before the completion of the Environmental Impact Statement, a whole section of the northbound elevated roadway near West 12th Street collapsed. This occurred while construction equipment was on the Highway to repair the deck in the area of 14th Street. This collapse, and subsequent structural inspection, resulted in the complete closing a short time later. In addition, sections of the existing highway to the north, beyond the boundaries of the Study Corridor, were also found to be structurally deficient and subsequently closed down.

West Side Highway Project Maintenance Alternative

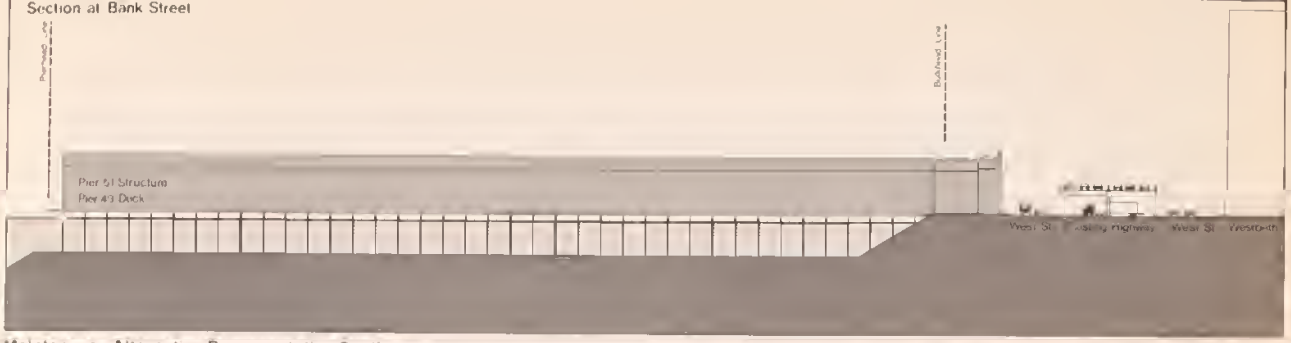
Existing Highway Facilities

Existing Public Park Lands

Project Study Corridor

North

Section at Bank Street



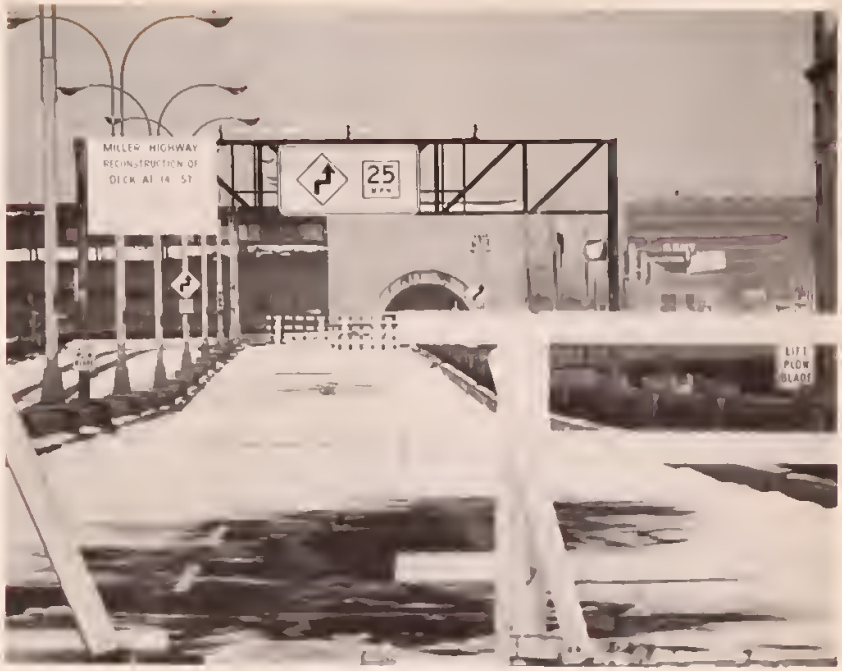
Maintenance Alternative Representative Section

In light of these unexpected and late developments within the Study Corridor, it became evident that the existing West Side Highway could be kept in operation between the Battery and Lincoln Tunnel only by first repairing the deficiencies. Thus, the Maintenance alternative had to be modified in order to incorporate the initial repair work which would have to be undertaken by the City. This work had become a prerequisite to continuation of routine maintenance until the design year of 1995.

First, the entire structure must be carefully inspected and its condition analyzed. Once the detailed physical condition of the highway is determined, decisions can then be made as to the scope of repair work necessary to put the closed section back into operation. This in-depth inspection and analysis by the City of New York is scheduled to start in the Spring of 1974, and is expected to continue beyond the time of the public hearing for the West Side Highway Project. Without the benefit of such information at present, the extent and nature of the specific repairs necessary to place the highway back in service and maintain it through 1995 cannot be known for certain. However, some assumptions can be made, based upon previous experience.

One relevant and recent situation provides guidance in this respect—the work done during 1973 on the southbound lanes of the West Side Highway near 14th Street. The concrete deck was removed, the structural steel repaired, the deck replaced, and new joints installed, along with a new pavement surface. Such efforts result in a structurally sound facility, but with no change or improvement in highway geometry or safety.

For the purposes of description of the Maintenance alternative, it is assumed that this type of work would be necessary on the section of highway from Canal Street north to 60th Street. The portion south of Canal Street is newer and currently in better condition. Repairs to the steel, joints and drainage system, along with painting, would be necessary for this part of the road. The section from 60th Street north to 72nd Street would also require somewhat less work at this time, because of extensive repairs made in recent years. However, it would be more difficult and costly to maintain this section, until 1995 and thereafter, than the section south of Canal Street, due to its greater elevation and age. After such immediate and extensive repairs were made, routine maintenance could then be resumed and the facility reopened to traffic.



In summary, the initial repairs contemplated for the highway would result in a structurally sound facility, capable of handling the same amount of automobile traffic that was accommodated prior to its closing in December of 1973. Trucks would still not be able to use the highway, and neither would the deficient curves and inadequate access ramps be improved. Past maintenance procedures, such as placing temporary steel plates over holes and temporary lane closings, would have to be continued into the future, based upon a long term repair schedule. No new public transit facility would be provided with this alternative. However, buses could continue to operate on West Street in mixed traffic.

Because none of the proposed improvements would significantly change the highway location, operation or configuration, the Maintenance alternative would not act as an incentive for change in adjacent areas. In fact, the negative aesthetic, structural and operational characteristics of the existing highway would continue as a disincentive for positive redevelopment forces on the West Side.

Reconstruction Alternative

The Reconstruction alternative provides for the rehabilitation and partial reconstruction of the existing West Side Highway between the Battery and 72nd Street, in order to correct major structural deficiencies, improve safety, and extend utilization of the facility to trucks and other commercial vehicles.

Rather than new transportation facilities, the Reconstruction alternative proposes specific modifications to the existing structure. These modifications would include new access ramps, the elimination of sharp curves, and the provision of safety shoulders which would remove some of the most dangerous features of the existing Highway. Reconstruction would also permit trucks to use the facility, thus diverting some heavy vehicles from local streets, in response to a major problem identified by local community groups. While providing improved safety and operational benefits, this alternative would lower the absolute capacity of the highway by reducing the number of lanes from six to four from Rector Street to 57th Street. No special transitway facility would be provided. However, the proposed improvements would permit buses to operate on the highway along with cars and trucks. The reconstruction of West Street-Twelfth Avenue would also allow for the improvement of local bus service.

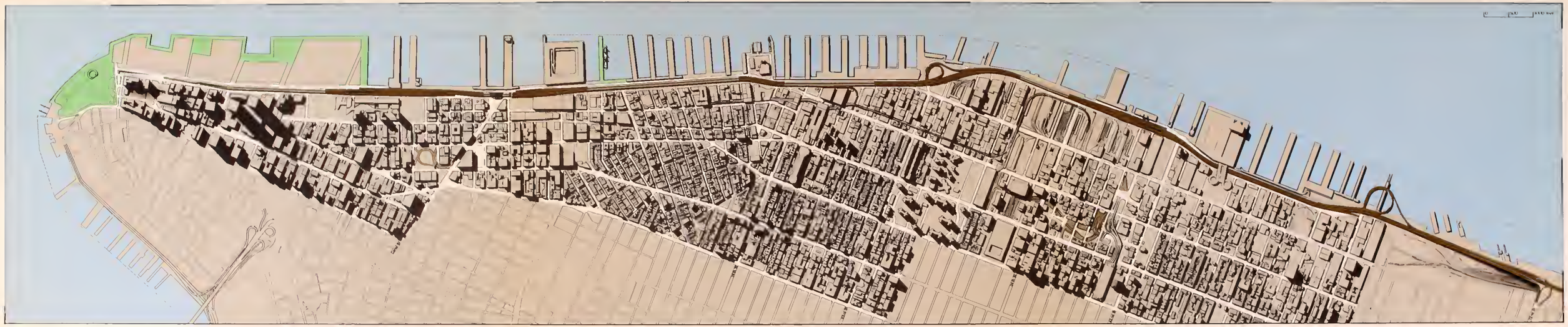
In summary, the Reconstruction alternative would provide greatly improved operational characteristics over the existing West Side Highway, but would retain the same physical character of an elevated highway structure. Except in the areas where sharp curves would be eliminated, a reconstructed highway would occupy the same space as the existing West Side Highway. No new right of way would be required, except for one ramp connecting the northbound roadway to Tenth Avenue at 18th Street.

Program Package Components

The primary components of the program package for the Reconstruction alternative are briefly described below, and then explained in detail as they apply to each of the four West Side communities.

- Throughout its entire length, a new roadway surface would be provided for the mainline highway, to replace the existing crumbling and potholed surface. Other more significant improvements, such as alterations to the existing structure, total reconstruction, and new ramps would be included in various locations along the corridor. The existing columns, foundations, girders and some steel structure would be retained in about 30 percent of the total length. The remaining 70 percent of the facility would be new construction.

- Beneath the elevated facility, West Street-Twelfth Avenue would also be reconstructed to provide three through traffic lanes in each direction, parking areas where feasible, and appropriate cross-street intersections with traffic signals.



West Side Highway Project Reconstruction Alternative

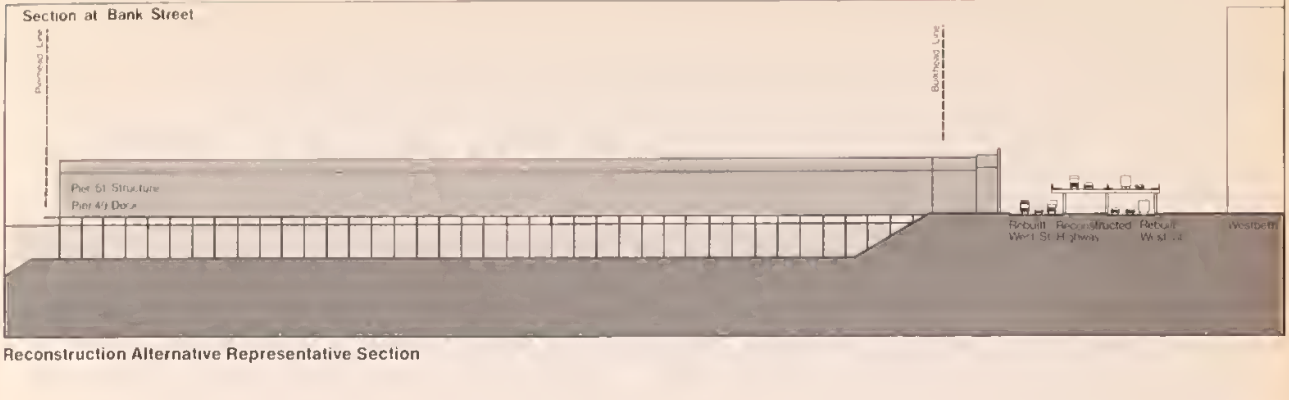
Existing Highway Facilities

Proposed Highway Facilities

Existing Public Park Lands

Project Study Corridor

North



Reconstruction Alternative Representative Section

Lower Manhattan
The section of the existing West Side Highway between Battery Place and Canal Street, completed in the early 1940's, was the last link of the original six-mile long facility to be built. As a result, this section has less deterioration and fewer structural weaknesses than other parts of the facility, and would require the least amount of alteration and reconstruction. South of Liberty Street, where the facility passes between the World Trade Center and Battery Park City and ends in ramps down to West Street, the Brooklyn-Battery Tunnel, and the Battery Park Underpass, only minor reconstruction and necessary roadbed repairs are proposed for the existing viaduct. Likewise, the existing arch bridge at Canal Street would require only minor deck modifications. Existing entrance and exit ramps near the Battery Park Garage and Rector Street would also be retained and unaltered. Only in the nine-block area between Warren Street and the Canal Street arch bridge, adjacent to the Tribeca warehousing district, would the highway be torn down and rebuilt to accommodate improved ramps which would permit both northbound and southbound traffic to enter and exit the highway at Chambers Street. In addition, a ramp would be constructed to permit northbound traffic to exit from the highway at Vestry Street, about three blocks south of Canal Street.

Greenwich Village
North of the Canal Street bridge to West Houston Street, adjacent to Pier 40, the existing highway viaduct would be torn down and reconstructed in order to accommodate new right-hand entrance and exit ramps at Canal and Spring Streets. The existing superstructure steel members would be reconstructed to provide a new and wider deck, capable of carrying two lanes of mixed traffic in each direction, with left and right safety shoulders, and speed change lanes for the new ramps.

At the northern end of the Village waterfront, the existing highway turns sharply between the Gansevoort Destructor complex and the Gansevoort 14th Street Meat Market, forming a sharp curve. In the Reconstruction alternative, the existing viaduct would be torn down between Horatio Street and West 13th Street, and rebuilt in a new alignment that would modify this curve.

Chelsea and Clinton
Along the Chelsea waterfront adjacent to Piers 58 to 62, two major modifications are proposed. At 18th Street, an exit ramp from the northbound highway lanes to Tenth Avenue would be constructed. And between 23rd and 29th Streets, where the existing highway makes another sharp curve directly above Thomas F. Smith Park, the entire viaduct would be torn down. The proposed reconstruction would involve a new alignment to modify the curve to meet safety requirements. It would also provide for new exit and entrance ramps at 23rd Street to replace existing ramps adjacent to the Chelsea Piers.

From 29th Street to 42nd Street, adjacent to the Penn Central railroad yards, a new elevated highway would be constructed. The existing ramps at 42nd Street would also be reconstructed to provide southbound access ramps and safety lanes.

From 42nd Street to 72nd Street, passing the proposed Convention Center and the new Consolidated Passenger Ship Terminal, major reconstruction of the facility would be required. Existing ramps located near 55th and 59th Streets would be replaced by a full interchange at 57th Street. Trucks would be allowed to use the reconstructed highway as far north as the new 57th Street interchange. In order to smooth the transition of traffic from the Henry Hudson Parkway at 72nd Street to the four lanes provided south of the proposed interchange, the remaining 15-block section of the highway north of 57th Street would be reconstructed with six lanes.

Arterial Alternative

The Arterial proposal contemplates the replacement of the existing West Side Highway with two new transportation facilities. These facilities would consist of an at-grade arterial street from Battery Place to 59th Street, and a depressed and covered transitway. Both facilities would be located largely within the right-of-way of the existing West Side Highway, commonly known as West Street, Twelfth Avenue and Marginal Street.

The most prominent feature of the Arterial alternative would be the demolition of the existing elevated highway. Except for the elimination of the existing structure, the waterfront and all riveredge facilities would remain as they are today. The proposed Arterial street would not create any additional land for development, recreation or open space. This facility would have a lower traffic capacity than the existing combination of the West Side Highway and West Street-Twelfth Avenue. Since it would not provide connections to all cross streets, a system of intermittent service roads is proposed to provide for traffic service to all existing West Side local streets. The transitway, which could be built either as a rail rapid transit line or an express busway, is illustrated here in its rail configuration. In summary, the Arterial with transit combination is an alternative which would preserve existing land-use conditions while providing new transportation facilities.

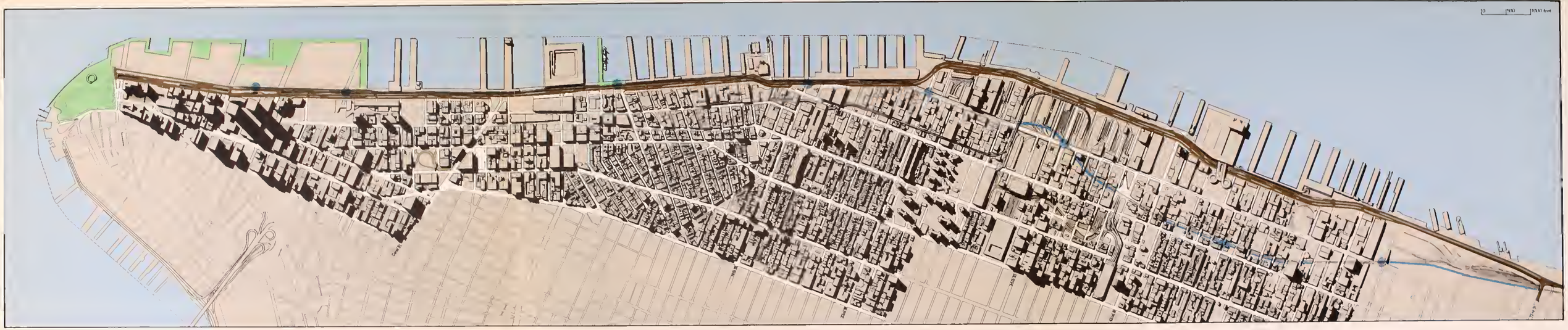
Program Package Components

The primary components of the Arterial alternative program package are briefly described below, and then explained in detail as they apply to each of the four West Side communities.

This photograph shows West Street south of Liberty Street on a summer morning in 1941, before the West Side Highway had been built in that area. Implementation of the Arterial alternative would result in the return to a similar relationship of the new surface thoroughfare to remaining pier facilities and upland areas in much of the Study Corridor.

- The proposed Arterial street would be a continuous at-grade facility with three lanes in each direction, separated by a 10 to 20 foot median. Intermittent service roads parallel to the Arterial would also be provided at specific locations based on traffic forecasts and the temporary parking requirements of adjacent land uses. Eleven major intersections would be provided where local traffic, from either the service road or from local streets, could enter or exit the main Arterial lanes in both northbound and southbound directions.

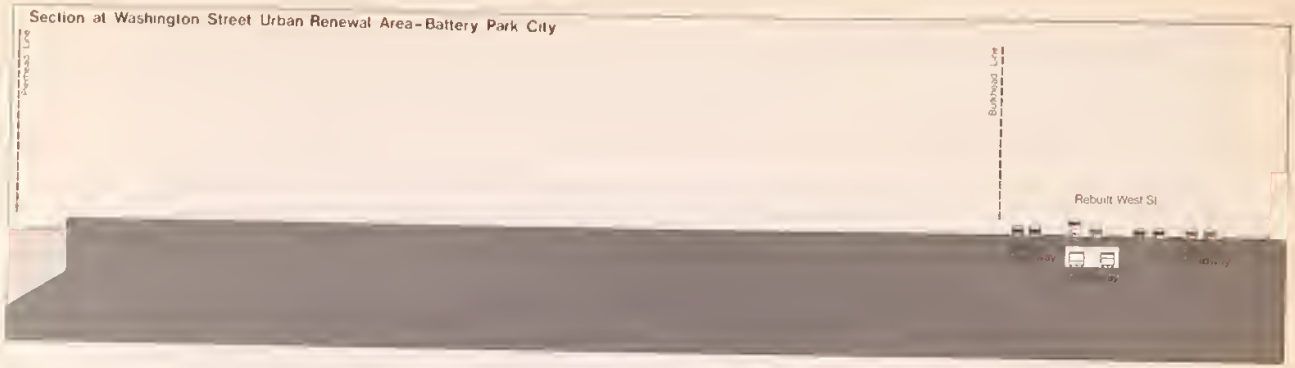
- The transitway would run beneath the Arterial from the World Trade Center to 23rd Street. Then it would follow a route under Eleventh Avenue to the 30th Street Penn Central rail yards, connecting to the existing railroad right-of-way through west Midtown and under Riverside Park. It also could continue under the new Arterial West Street-Twelfth Avenue, and join the Penn Central rail right-of-way in the 60th Street yards.

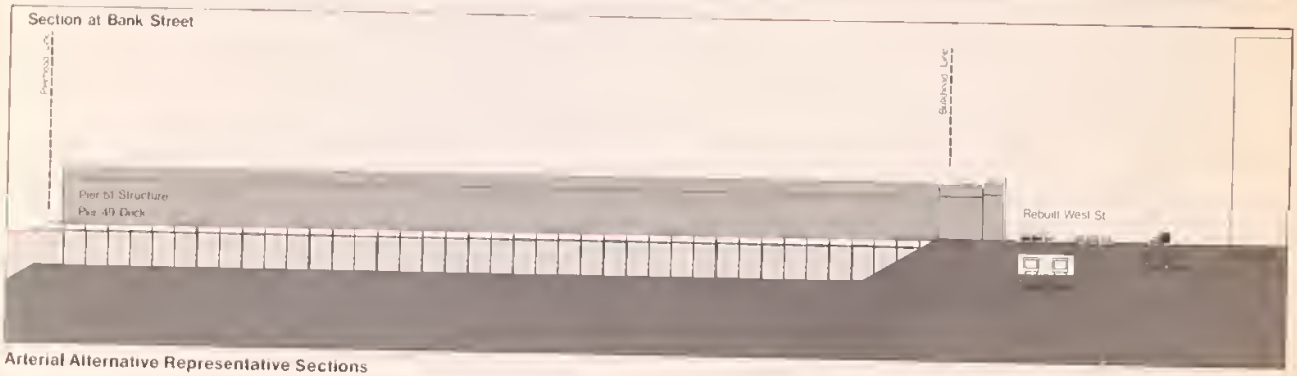


West Side Highway Project Arterial Alternative

- Proposed Highway Facilities
- Proposed Transitway (Covered)
- Proposed Transitway (Uncovered)
- Proposed Transit Station
- Existing Public Park Lands
- Project Study Corridor

North





Arterial Alternative Representative Sections

Lower Manhattan

South of Canal Street in Lower Manhattan the Arterial alternative would consist of an at-grade six-lane street with parallel service roads and a depressed and covered transitway underneath the median with a station between Battery Park City and the World Trade Center. Starting at Battery Place, the Arterial would be a median-separated facility with three lanes of traffic in each direction. It would be intersected by major cross streets at Battery Place, Liberty, Vesey and Canal Streets, and have a grade-separated connection from the southbound lanes of the Arterial directly to the Brooklyn-Battery Tunnel. The existing grade-separated connections to and from the World Trade Center underground parking facilities and the north and southbound roadways would be maintained.

In order to provide vehicular access to Battery Park City and existing uses along the east side of West Street, parallel one-way service roads on each side of the Arterial lanes would be provided. These service roads would be 34 feet wide and accommodate two lanes of traffic plus a parking lane. The service road along the west side of West Street would extend north only as far as the end of the Battery Park City property. The service road along the east side of West Street would continue north past the Washington Street Urban Renewal Area to Canal Street in order to provide access for present and proposed development in that area.

The proposed transitway would begin at an underground station located near the World Trade Center and proceed north under the new Arterial street. A second rail station in Lower Manhattan would be located between Chambers and Franklin Streets. It would serve residential, institutional and commercial development in the Washington Street Urban Renewal Area and the northern portion of Battery Park City.

Greenwich Village

North of Canal Street along the West Village waterfront, both the Arterial street and the transitway would continue in the same configuration and alignment that occurs in Lower Manhattan. Transit station locations in the Greenwich Village area are proposed to coincide with major local street intersections at Christopher Street and 14th Street. These intersections would connect local streets to both the main northbound and southbound roadways serving adjacent commercial activity and West Village residential areas.

A service road in this area is located on the east side of the Arterial between Christopher Street and 14th Street, and is intended to provide access to existing buildings fronting onto West Street. In order to create a "buffer strip" in front of residential uses such as Westbeth and the West Village Housing Project, the service road has been aligned in such a manner so as to provide a 50-foot strip of land between the curb and building lines. This buffer strip could also be used to serve as a truck parking apron in front of remaining commercial buildings and to accommodate trucks or trailers which would otherwise block the street. In the Gansevoort-14th Street Meat Market area, a more substantial apron would be provided by shifting the alignment of the Arterial to the west.

Chelsea and Clinton

North of West 14th Street along the Chelsea waterfront to 23rd Street, the alignment of the Arterial has been moved to the east in order to provide a truck apron area in front of the Chelsea Piers. Due to the restricted amount of space between the pier headhouses and the buildings lining West Street at this location, no service road could be provided, and a parking lane has been added to the otherwise standard six-lane cross-section.

A rail transit station is proposed for the 23rd Street area. From this point the transitway would follow Eleventh Avenue below grade, and then utilize Penn Central railroad right-of-way through the 30th Street and the 60th Street rail yards to the Riverside Park tunnel portal at 72nd Street.

North of 23rd Street, passing the 30th Street Penn Central yards, a one-way service road would be provided along the east side of the northbound Arterial lanes. The Arterial lanes and service road have been shifted east as far as possible in this area, in order to avoid impacting the 30th Street Heliport and the Colonial Sand and Stone facilities, and to maintain apron space in front of Pier 76. As the Arterial continues through Midtown to 72nd Street it is anticipated that heavy local traffic from the proposed Convention Center and the new Consolidated Passenger Liner Terminal would be mixing with Midtown traffic heading north to the George Washington Bridge or south to Lower Manhattan. For this reason, parallel service roads have been added, where possible, to separate through traffic from local movements, and the number of intersections with local streets has been reduced to facilitate traffic flow. Since the Henry Hudson Parkway is elevated over the Penn Central rail tracks at 72nd Street, the Arterial street would climb from grade at 50th Street to approximately plus 60 feet at 72nd Street. Major intersections connecting local streets to both the northbound and southbound roadways would be located at 23rd, 34th, 42nd, 59th, and 72nd Streets.

Inboard Alternative

The Inboard alternative consists of three major transportation facilities—a six lane interstate highway, a new transitway, and a rebuilt West Street. These facilities would be located largely in the existing West Street-Twelfth Avenue and Marginal Street right-of-way, near the bulkhead line, from the Brooklyn-Battery Tunnel to 43rd Street.

The Inboard alternative presents a range of transportation components which were, to a large extent, planned and designed to preserve the existing character and facilities of the Hudson River waterfront. The existing West Side Highway would be demolished in this alternative. However, few other major waterfront facilities would be disturbed. Pier 40 and the Chelsea Piers would remain essentially as they exist today, the Morton Street Pier would be replaced in part, and while the incinerator at the Gansevoort Destructor would be removed, the Marine Transfer Station for solid wastes would remain. The waterfront facilities along the West Side would continue to serve the same social and economic functions as they do today.

At the same time, the preservation of these facilities would place limitations on the potential for new or different uses on the waterfront. Public access to the river edge and waterfront open space would not be significantly altered by the Inboard alternative, except in the West Village area, where the new highway and transitway would be depressed and covered. The new highway would not directly initiate any new development or create any new land, except in the West Village and at the Holland Tunnel interchange. Neither would the proposed transitway, which is illustrated here with ramp connections for an express bus system, create major incentives for new development. In summary, this alternative has been designed to preserve as many of the existing waterfront activities and potentially useful structures as possible.

Program Package Components

The primary components of the program package for the Inboard alternative are briefly described below, and then explained in detail as they apply to each of the four West Side communities.

- The interstate highway would be a six-lane facility and would consist of various depressed, at-grade and elevated sections from the Brooklyn-Battery Tunnel to 43rd Street. These sections would be either partially covered and ventilated, totally covered and ventilated, or completely exposed, depending upon the nature of present and forecast adjacent land uses, and engineering requirements.

- The transitway would be located between the highway lanes in part of the alignment, and would be depressed and covered under the service road in others. The transitway could accommodate either bus or rail system, and could be converted from one system to another. The major physical differences between bus and rail systems would be in the provision of tracks or pavement, ramps, station locations and ventilation systems. An Inboard express bus system would run from a station at the World Trade Center and Battery Park City to 23rd Street, and then follow an Eleventh Avenue alignment north to the Penn Central railroad right-of-way through Midtown, the 60th Street yards, and the tunnel under Riverside Park joining the Henry Hudson Parkway ramps to the George Washington Bridge.

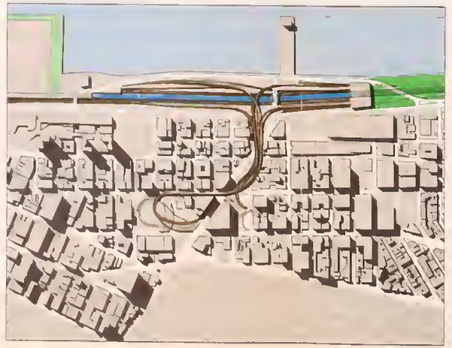
- A service road would parallel both sides of the highway-transitway facility, providing three lanes of traffic in each direction. It would be a continuous at-grade street designed to accommodate local traffic, and to provide parking and storage areas where feasible.

- Full directional interchanges between the new highway facility and the Brooklyn-Battery, Holland and Lincoln Tunnels are proposed. Connections would also be provided to the Battery Park Underpass and 14th Street. The new highway would connect back to the existing West Side Highway near 43rd Street.

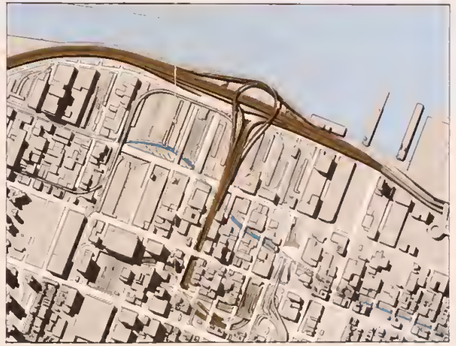
- Approximately 20.9 acres of new land would be created by the Inboard alternative, in the area of the Greenwich Village waterfront. It is proposed that this land, which would be located over the depressed and covered highway and transit facility, would be developed for open space and recreation.

Alternative Holland Tunnel Interchange

Note: It would be possible to preserve Pier 40 with this interchange



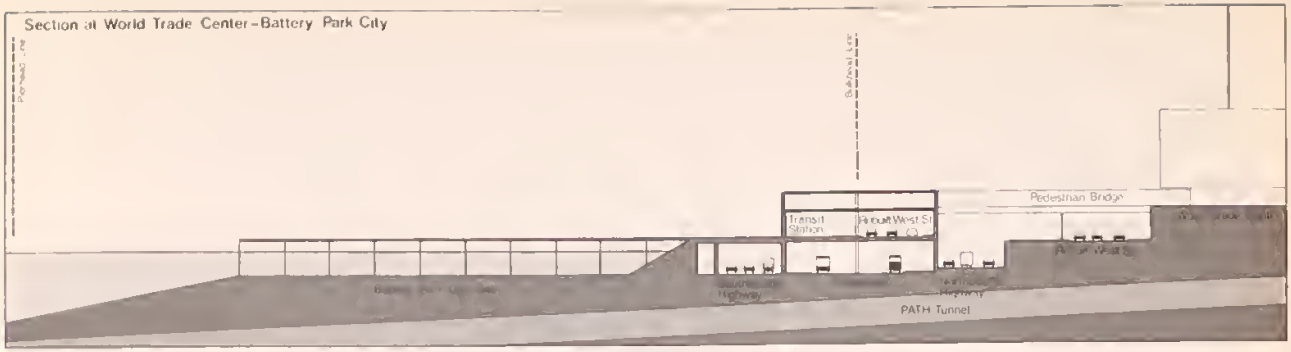
Alternative Lincoln Tunnel Interchange

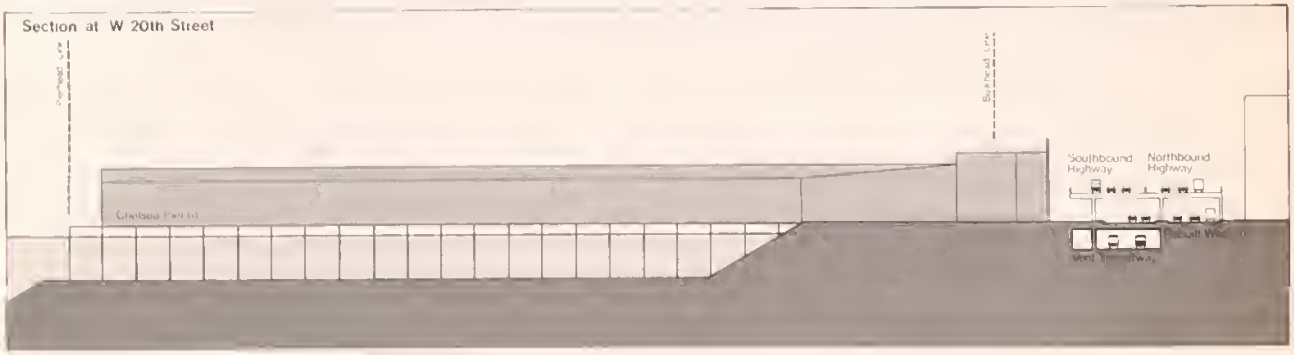


West Side Highway Project Inboard Alternative

- Existing Highway Facilities
- Proposed Highway Facilities
- Proposed Transitway (Covered)
- Proposed Transitway (Uncovered)
- Existing Public Park Lands
- Proposed Public Park Lands
- Project Study Corridor

North





Inboard Alternative Representative Sections

Lower Manhattan

In Lower Manhattan, both the highway and transitway would be constructed below grade, largely in the West Street-Marginal Street right-of-way. The transitway and the southbound lanes of the highway would be covered and ventilated. The northbound lanes of the highway would be depressed but not covered. The highway would originate with direct underground connections to the Brooklyn-Battery Tunnel, and surface connections to the Battery Park Underpass. The transitway would start from an underground station located between the north and southbound roadways, adjacent to the World Trade Center and Battery Park City.

In order to provide for local traffic and pedestrian circulation, a network of surface streets and overhead pedestrian walkways is planned to connect already developed sections of Lower Manhattan with Battery Park City, the World Trade Center and the Washington Street Urban Renewal Area. These facilities would include a reconstructed West Street, providing three lanes of traffic in each direction. Access ramps between the highway and surface streets would be provided at Battery Place, at the intersection of Trinity and Greenwich Streets, at Rector Street and at Barclay Street.

North of Harrison Street, passing the Washington Street Urban Renewal Area, the highway would rise slightly and enter an open section designed to accommodate the ramps to the Holland Tunnel interchange. Two alternative designs are under consideration for this interchange. One alternative would utilize two separate corridors to accommodate elevated ramps to and from the Holland Tunnel portals. The other would place all the ramps in one corridor, above Canal and Hudson Streets. Some new land would be created along the bulkhead line in the interchange area to provide space for a ventilation building, the access ramps, and the new highway.

Greenwich Village

Immediately north of Canal Street, the highway and transitway would be depressed below grade in a totally covered and ventilated section past Pier 40 and along the Greenwich Village waterfront. Construction of this section would require additional landfill west of the bulkhead line. The space over the highway not required for the service street would provide for 20.9 acres of open space and recreational land, adjacent to what is projected to become a predominantly residential area of the waterfront. The highway would leave the depressed and covered section at Gansevoort Street, passing under a proposed ventilation building and local streets, which would provide access to the Marine Transfer Station.

West Street would be reconstructed as a service road, and designed to provide for three lanes of traffic in each direction. A 50-foot "buffer" strip would be provided between the building line and the new curb line. This space could be used for either open space or, in commercial situations, truck parking. At Jane Street, West Street would diverge to pass on either side of the ventilation building at the tunnel portal. The northbound lanes would continue past the Gansevoort-14th Street Meat Market, where a truck storage apron would be provided for daily activities of the market.

North of Gansevoort Street, the highway would emerge from the depressed section and begin to rise to become elevated opposite 16th Street. Within this 14th Street area, access ramps would be provided to West Street to accommodate local and crosstown traffic. Access ramps between the highway and local streets also would be provided at Canal Street.

Chelsea and Clinton

North of 16th Street, the highway would become elevated, a reconstructed West Street would be located at grade beneath the elevated structure, and the transitway would be depressed beneath West Street. These three facilities, vertically stacked, would pass through a narrow corridor between the Chelsea Pier headhouses and the existing building line along West Street. The space available is so small that if these elements - the highway, transitway or West Street - were designed in any other configuration, demolition of either the piers or the adjacent commercial properties would be required.

At 23rd Street, the transitway would either swing east under Eleventh Avenue or would remain beneath Twelfth Avenue through Midtown to the 60th Street railroad yards. In the case of an express bus system using the Eleventh Avenue option, access to and from the transitway would be provided near 41st Street in the vicinity of the Lincoln Tunnel plaza and the Port Authority Bus Terminal.

North of 23rd Street, the highway would remain elevated and located approximately in the existing right-of-way of Twelfth Avenue, eventually connecting with the existing West Side Highway at 42nd Street. Two alternative interchange designs are under consideration at the Lincoln Tunnel. They would provide direct connections between the tunnel, the local street network, West Street, Twelfth Avenue and the new highway. Either proposal would utilize a single corridor elevated viaduct configuration and connect to the existing Lincoln Tunnel entrance ramps. However, each interchange alternative has a different location. A 30th Street location is shown as part of the foldout illustration, and the 35th Street alternative is displayed directly below it.

Outboard Alternative

The Outboard alternative consists of three major transportation facilities: a six-lane interstate highway, a new transitway, and a reconstructed West Street-Twelfth Avenue. Both the highway and the transitway would be located in new landfill near the pierhead line for a large part of their length between the Brooklyn-Battery Tunnel and West 43rd Street. An exception would occur in Lower Manhattan adjacent to Battery Park City, where the transportation facilities would be located largely in the existing West Street Marginal Street right-of-way.

The Outboard alternative assumes a significant transformation of the Hudson River waterfront. The existing West Side Highway would be torn down. Likewise, all of the existing waterfront facilities south of 37th Street, including Pier 40, the Morton Street Pier, the Gansevoort Destructor complex and the Chelsea Piers, would also be demolished. In place of the existing mixture of waterfront facilities, there would be 243 acres of new landfill from Battery Park City to west 42nd Street. This newly created land would accommodate the proposed highway and transitway in a depressed, covered and ventilated section, and would provide for a continuous belt of public open space over the highway and along the edge of the Hudson River. In addition, the new landfill between the highway and the bulkhead line could be made available for other uses including housing, as a direct consequence of the transportation project.

In summary, the Outboard alternative would consist of highway and transitway facilities similar in service and operations to the proposed Inboard facilities, with the transitway illustrated here as an express bus system. However, the Outboard alternative would be the catalyst for major physical changes on the West Side and would provide the opportunity for systematic and controlled redevelopment of the Study Corridor.

Program Package Components

The primary components of the Outboard alternative program package are briefly described below, and then explained in detail as they apply to each of the four West Side communities.

- The interstate highway would be a six-lane limited access facility, and would be depressed, covered and ventilated in newly-created land near the pierhead line for most of its length. In Lower Manhattan, however, the facility would be depressed and partially covered at a location similar to the Inboard plan.

- The transitway would be a depressed and covered facility throughout the length of the corridor, located adjacent to the new highway. The transitway could accommodate either bus or rail systems, and could be converted from an express bus system to rail. An express bus system was initially proposed for this alternative operating from the World Trade Center to West 23rd Street, and then following either an Eleventh Avenue or Twelfth Avenue alignment northward to the George Washington Bridge, as described in the Inboard alternative.

- West Street-Twelfth Avenue would be reconstructed in its present right-of-way as a service road, providing for three lanes of traffic in each direction. It would be a continuous at-grade street designed to accommodate local traffic and to provide parking and storage areas where feasible.

- Full directional interchanges are proposed at the Brooklyn-Battery, Holland, and Lincoln Tunnels, and connections would also be provided with the Battery Park Underpass, West 14th Street and back to the existing West Side Highway at West 43rd Street.

- It is estimated that 243 acres of new land would be created by the Outboard alternative, only 40 of which would be utilized by transportation facilities. About 75 acres could be developed for recreation and open space along the edge of the River as part of the construction cost and activities of the Project, and 128 acres would be available for other types of development.

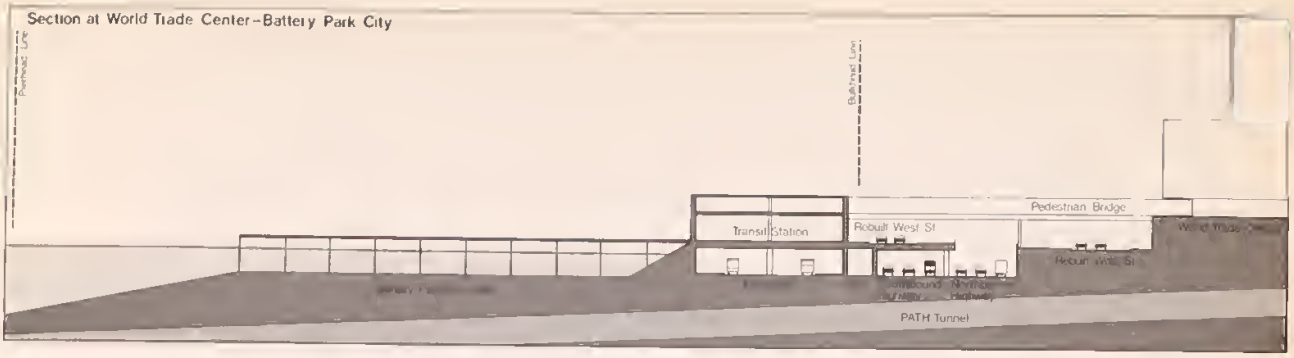
Alternative Holland Tunnel Interchange

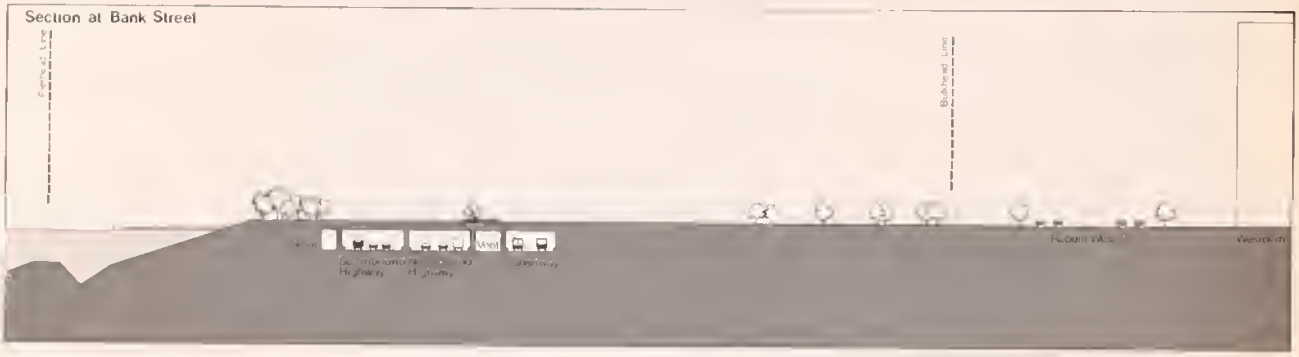
Alternative Lincoln Tunnel Interchange

West Side Highway Project Outboard Alternative

- Existing Highway Facilities
- Proposed Highway Facilities
- Proposed Transitway (Covered)
- Proposed Transitway (Uncovered)
- Existing Public Park Lands
- Proposed Public Park Lands
- Project Study Corridor

North





Outboard Alternative Representative Sections

Lower Manhattan

In Lower Manhattan, both the highway and the transitway would be underground and would follow the existing West Street-Marginal Street right-of-way between Brooklyn-Battery Tunnel and North Moore Street. The highway would also have underground connections to the Battery Park Underpass. The transitway would start from an underground station located west of the southbound roadway, adjacent to Battery Park City and the World Trade Center. Both highway and transit facilities would be covered, except for the northbound lanes of the highway, which would remain open in order to facilitate ramp access and ventilation.

In order to provide for local traffic and pedestrian circulation, a network of surface streets, bridges, and elevated pedestrian walkways are planned. These facilities would include a reconstructed West Street, providing three lanes of traffic in each direction. Between the highway and the local street network, access ramps are proposed at Battery Place, the intersection of Trinity and Greenwich Streets, and at Rector and Barclay Streets. At North Moore Street, the highway would enter an open and depressed section and would start to rise and swing out toward the pierhead line in the new landfill. The transitway would drop down and pass under the highway lanes at approximately Vestry Street and continue north parallel to the highway, but now on its eastern side.

The Holland Tunnel interchange would be a major facility in this area. Two alternative designs are under consideration for this interchange. One alternative would utilize two separate corridors to accommodate elevated ramps to and from the tunnel portals. The other would place all ramps in one corridor above Canal and Hudson Streets. Approximately 47 acres of new land would be created in the interchange area to accommodate transportation facilities, as well as a proposed ventilation building at North Moore Street and a proposed City Sanitation Department facility at Canal Street. The Sanitation Department facility would comprise a relocated Marine Transfer facility and space for other uses, including the parking of buses if an express bus transit alternative is selected. An additional 13 acres would be available for open space along the River between Battery Park City and Canal Street.

Greenwich Village

Along the Greenwich Village waterfront between Canal Street and 14th Street, the highway and transitway would become depressed and covered in new landfill near the pierhead line. Access ramps between the highway and West Street would be provided at Canal Street. Within this area, the section of the facility from Houston to 14th Streets would be totally covered, and ventilation buildings for it would be located at each end. This alignment and configuration would provide 37 acres of continuous public open space along the Village waterfront, permit unhindered pedestrian access to the edge of the water, and would make possible a wide range of activities and development opportunities on 54 acres of newly-created land between the highway and the existing bulkhead line.

Within the right-of-way of West Street-Marginal Street, the existing highway would be demolished and West Street would be reconstructed to provide a service road with three lanes of traffic in each direction, separated by a median. This street would connect with existing cross-town streets, and a 50-foot buffer strip would be provided between it and the existing building line.

In order to help alleviate the heavy truck congestion around the Gansevoort-14th Street Meat Market, the existing alignment of West Street-Twelfth Avenue would be moved to the west, eliminating the tight curve and providing additional truck parking and loading areas. Within the Meat Market, the existing 14th Street would be widened to provide space for market truck loading and parking space. New street lanes would be created by acquiring and demolishing the buildings along the north side of 14th Street between West Street and Ninth Avenue. The affected businesses could be relocated within the existing market area. The new 14th Street traffic lanes would be extended west at grade into the landfill area to a location near the highway-transit facilities, close to the pierhead line.

Direct access ramps would be provided between the highway and the new 14th Street and West Street Ramps from the transitway for an express bus system would be integrated with the highway structure in order to provide access to 14th Street and cross-town distribution routes. Related facilities at 14th Street would include ventilation buildings servicing covered sections to both the north and south of the area, and possible relocation sites for police and fireboat facilities which would be displaced from their existing location at the Gansevoort Pier.

Chelsea and Clinton

From 14th to 27th Streets, in the area of the Chelsea waterfront, the highway would continue in a depressed, covered and ventilated section near the pierhead line. Similar opportunities for open space along the River and offshore development would be possible along the Chelsea waterfront. In this area, 22 acres would be provided for a continuous park along the River, and 25 acres would be available for other types of development. The reconstruction of West Street-Twelfth Avenue would also proceed in the same manner adjacent to the Chelsea Triangle as in the West Village.

At 23rd Street, the transitway would either swing east and continue north under Eleventh Avenue, or remain in the highway alignment to 42nd Street and then continue under Twelfth Avenue. In the case of an express bus system using the Eleventh Avenue option, access to and from the transitway would be provided at 23rd Street and near 41st Street in the vicinity of the Lincoln Tunnel plaza and the Port Authority Bus Terminal. These ramps would serve proposed crosstown distribution routes.

At 27th Street, the Outboard highway would leave the depressed and covered section and rise to an elevated configuration to provide for connections to the Lincoln Tunnel. Two single corridor configurations are under consideration for this connection—one at 30th Street and the other at 35th Street. Both would provide direct connections to the tunnel portals by way of elevated ramps, as well as direct connections to the local street network by way of West Street-Twelfth Avenue. In the interchange area, 38 acres of new land would be created and provision made for continuous public access to the edge of the River and the location of a replacement Marine Transfer Station for the City Sanitation Department. North of the interchange ramps, the highway would connect into the existing West Side Highway at approximately 42nd Street.

Public transit options were also refined and coordinated with proposed highway alternatives during this period. The overall objectives of the transit studies were to accommodate future increases in regional travel on the West Side, and to discourage additional automobile commuting to Manhattan. Out of the initial range of five transit systems examined, two were found capable of meeting these objectives, depending upon the planning strategies and assumptions of each program package: express buses operating in a separate right-of-way, and conventional subway trains incorporating the best available technology.

In order to preserve both rail and express bus options for each of the appropriate alternatives, an exclusive transit facility, or "transitway," was conceived and designed. This transitway component for various program packages could accommodate either the rail or express bus system. A further flexibility of the transitway is that it would permit future conversion from one such transit system to the other. Thus, future changes in transit technology, in land use, or in travel demand could be accommodated by the transitway component. In this way, more than one transit option could be preserved for particular Project alternatives.

The rail transit option initially was matched with highway proposals utilizing the present rights-of-way of the existing West Side Highway and West Street-Twelfth Avenue. This conventional subway system would run from the vicinity of the World Trade Center to 240th Street in the Bronx. It would be located in a transitway beneath West Street from the World Trade Center to 23rd Street. From this point, the transitway would be constructed either beneath Eleventh Avenue to the 30th Street Railroad Yards, or under West Street-Twelfth Avenue to the 60th Street Railroad Yards. The transitway would then join the Penn Central rail right-of-way, running north under Riverside Park. At about 145th Street, the line would divide, with one branch following the Penn Central right-of-way north and the other going east to Mott Haven in the Bronx. This option assumes moderate levels of growth within the Study Corridor by 1995, and provides for more rapid service between the subway system in northern Manhattan and parts of the Bronx, and the West Side in Midtown and Downtown.

The express bus transit system was proposed as an exclusive bus facility in a transitway adjacent to a new highway below 23rd Street. Between 23rd Street and the George Washington Bridge, this express bus system would follow the same Penn Central right-of-way as the rail transit proposal, differing only in station locations and the provision of access ramps. Operationally, the express bus system was designed to coordinate crosstown circulation patterns in Manhattan with collection-distribution routes in the suburban commuter market areas. The concept of express buses on exclusive lanes is a relatively new public transit innovation which is currently experiencing wide ranging development and growth in several cities across the country.

Rail

Express Bus

Illustration Transitway Sections for Rail and Express Bus Systems

The rail transit service would make use of a version of this car

This is a production prototype of the vehicle proposed for express bus service

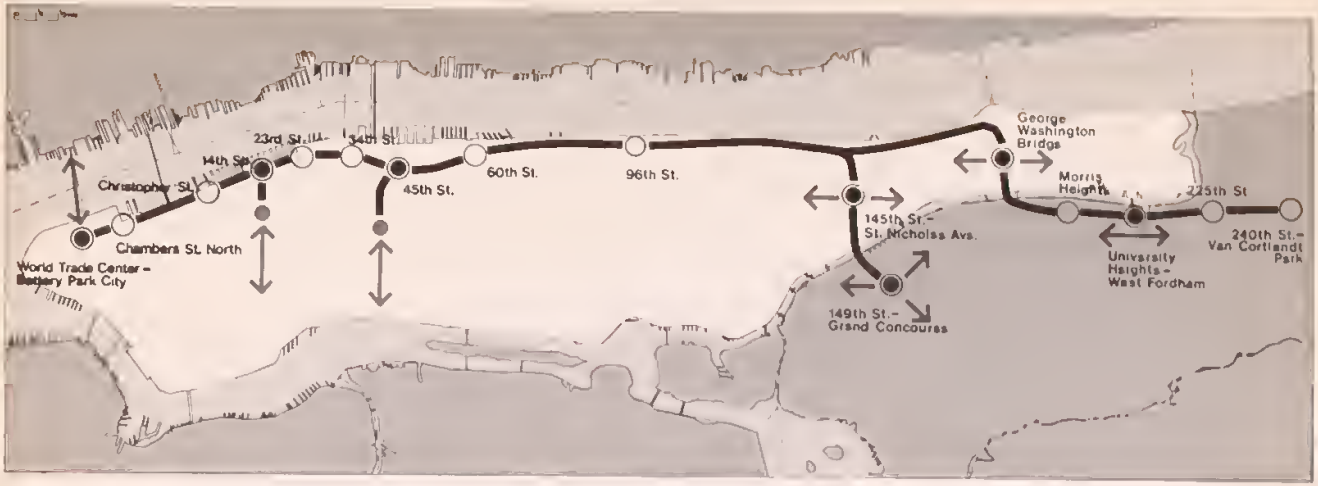


Illustration Proposed Rail System

Proposed Route

Connecting Subway or Commuter Rail

Proposed Station

Proposed Transfer Station

North

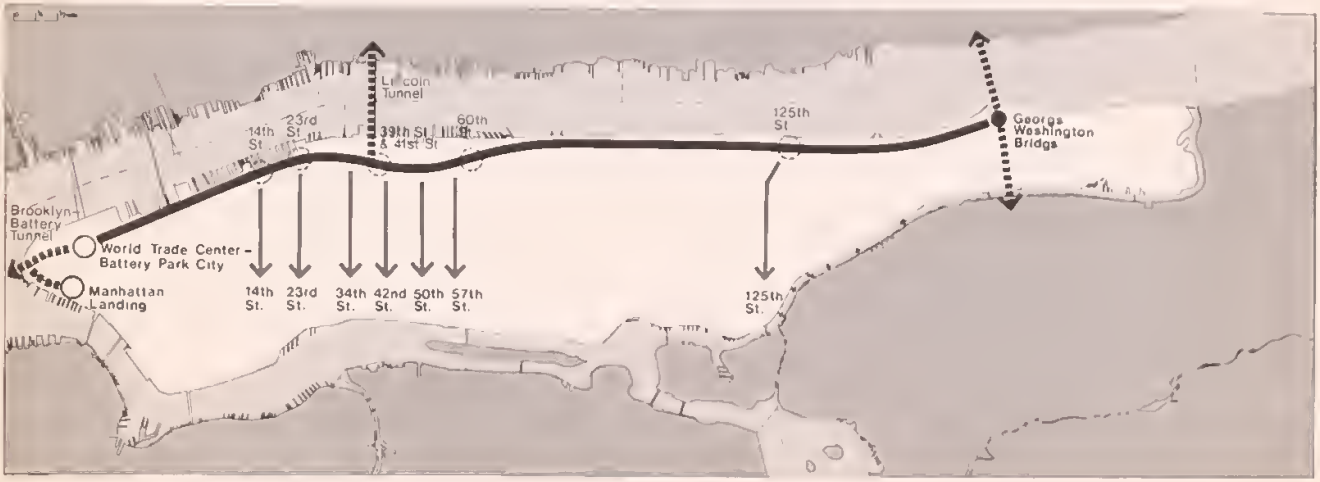


Illustration Proposed Express Bus System

Proposed Route

Proposed Circulation Points

Express Buses in Mixed Traffic

Proposed Station

Existing Station

Access Point to Transitway

North

Summary of Probable Impacts

Competing interests and differences in priorities are inherent in any major undertaking, such as improving transportation facilities on the West Side of Manhattan.

It is recognized by the Steering Committee that environmental quality, social amenities, economic growth, and transportation benefits are all legitimate, it competing, concerns of the public. Attempts to maximize any one of them will often conflict with the achievement of others. Providing an optimum condition within the West Side corridor will necessarily and properly reflect the balancing of various values. Such choices will be determined in concert with the persons, communities and organizations affected by the Project.[22]

The probable impacts of the five Project alternatives can be readily identified as either adverse or favorable, short-term or long-term, avoidable or unavoidable. Each is examined in order to assess whether irreversible adverse impacts curtail the range of potential future uses of the environment.

Each particular impact has definable characteristics by which beneficial or adverse effects can be determined. For example, all air, noise and water quality conditions which would either exceed Federal standards or existing conditions are considered adverse. Any land-use configuration which would cause or perpetuate undesirable results in terms of community disruption, reduction of open space and needed public facilities, or traffic congestion, is considered adverse. On the other hand, any existing condition which would be improved by a transportation alternative is considered to have beneficial impacts.

Assessment of adverse impacts includes consideration of abatement or corrective measures which are economically prudent, technologically feasible, safe and generally effective. Any adverse impact requiring an abatement measure outside these guidelines is considered unavoidable.

[22] **Policy Statement of Steering Committee.** West Side Highway Project Report No. 2.01, August 1972.

The extent to which the Project alternatives involve possible trade-offs between short-term uses of man's environment and the maintenance and enhancement of long-term productivity of the environment is also considered. Without defining specific time limits, short-term impacts are those which would have an immediate or direct consequence for the Study Corridor and surrounding area, including construction periods. Long-term effects are those which would primarily affect future generations.

Any one of the five Project alternatives would cause certain unavoidable impacts, requiring irretrievable and irreversible commitments of resources that would limit the available future options on the West Side and in Manhattan. In such cases, potential uses of the Corridor are constrained in different ways, given the configuration of each alternative.

Traffic and Transportation

Each proposal would provide long-term beneficial impacts on traffic, except for the Maintenance alternative. Repairing and maintaining the existing highway for more than 20 years into the future would result in increased congestion and worsening traffic flow conditions on the highway and the Corridor local streets. Vehicle speeds on both the highway and local streets on the average would decrease significantly, and congestion and its resulting effects would increase. These conditions are both short-range and long-range adverse impacts.

The Reconstruction alternative would improve safety and permit higher speeds by the elimination of curves, relocation of ramps and provision of shoulders. Traffic flow would be improved during off-peak hours, but traffic demand would still exceed capacity during peak hours. Extensive use of a proposed traffic surveillance and control system would be necessary to prevent extreme congestion. Queuing would tend to occur on approach streets.

The Inboard and Outboard alternatives would provide safe highways with increased capacity. Peak-hour speeds would increase substantially and peak-hour congestion would decrease, particularly in the section between Canal and 42nd Streets. There would be some traffic flow problems, however, at each end of the highway. In the section north of 42nd Street, the quality of evening peak-hour flow would decline as traffic moves from the new, higher capacity West Side Highway to the lower capacity Henry Hudson Parkway. A similar situation would occur near the Brooklyn-Battery Tunnel during the evening peak hours, when West Side Highway traffic moves south into the tunnel. Peak-hour flow would be slightly better with the Outboard alternative because its alignment would produce slightly lower peak-hour volumes. To make certain that desirable flow conditions are maintained and full use is made of either the Inboard or Outboard facility, ramp metering and diversion would be implemented through the traffic control system. The location of ramps and the expanded capacity of West Street would facilitate these controls.

Local Street System

Compared with the Maintenance alternative, the Reconstruction and Arterial alternatives would not significantly improve traffic conditions on study area streets. Conditions near the Hudson River tunnels would continue to be extremely congested during evening peak hours. The reconstructed highway and the Arterial boulevard would be unable to attract significant auto traffic from the local system, primarily because no significant increases in mainline capacity would be provided. However, because of the numerous exits and entrances on the Arterial mainline and the favorable flow conditions during off-peak hours, some short trips might be diverted from local streets during these hours. The attractiveness of high speeds and uncongested conditions on either an Inboard or Outboard highway would divert sufficient traffic from the local system to increase peak hour average speeds. Also, provision of direct ramp connections between the tunnels and the highway would reduce the amount of congestion on nearby local streets.

By allowing trucks on the highway, the Reconstruction alternative would reduce the volume of truck traffic (measured in truck vehicle-miles of travel, or VMT) on the local streets in the study area by approximately nine percent compared with the Maintenance alternative. The mainline in the Arterial alternative (West Street) would divert sufficient truck traffic from other local streets to reduce their daily truck VMT by about six percent.

Either the Inboard or Outboard alternative would reduce truck traffic on local streets by approximately 9 and 12 percent, respectively. This would occur primarily because of the attractiveness of increased speeds and reduced congestion on the highway. Total vehicle-miles of truck travel in the impact area, however, would increase slightly as a result of the longer paths for diverted trips. Because of the location and design of the 14th Street interchange, this increase in truck VMT would be smaller with the Outboard alternative.

Parking

The provision of transit service in the Arterial alternative would increase the potential to restrict parking availability. Implementation of this alternative would also eliminate the truck parking spaces currently under the existing West Side Highway. This would have a significant impact in the areas near the Gansevoort-14th Street Meat Market, and near the Union and Saint John's truck terminals.

With either the Inboard or Outboard Alternative, the proposed transit service would attract suburban riders away from automobile transportation and increase the potential for limiting parking availability. There would also be a substantial reduction in the parking spaces available for trucks in the highway corridor, although some spaces would be provided near the meat market.

Neither the Reconstruction nor Maintenance alternatives would offer any further opportunity to restrict the availability of parking spaces.

Transit

No transit system is included in the Reconstruction or Maintenance alternatives. The Arterial, Inboard and Outboard alternatives provide for a transitway which could accommodate either rail transit or express bus service.

The rail rapid transit system which would extend from the World Trade Center in Lower Manhattan to Van Cortlandt Park in the Bronx would serve primarily city transportation markets. By 1995, the rail transit option would carry 157,244 passengers with trip destinations in the Manhattan Central Business District. Approximately 9,000 (5.7 percent) of these passengers would have been diverted from automobile transportation.

The transit alternative featuring express buses with exclusive bus lanes would provide primarily commuter service between outlying counties and boroughs and the Manhattan CBD. The variations in projected ridership results from differences between the number and location of access ramps between the busway and local streets. The ridership is predicted to range from 68,000 passengers with trip destinations in the CBD to 82,000 passengers. Approximately 15 percent of these passengers would have been diverted from automobile transportation.

Social and Economic Effects

Economic

The Region, the Manhattan Central Business District and the West Side would experience long-term benefits from the provision of improved access to the CBD, thereby reducing the cost of doing business in the CBD and helping to retain or attract job-intensive industries. These benefits primarily are associated with the Outboard, Inboard and Arterial alternatives, each with a transitway. Each alternative would also generate jobs and cash flow in the area in proportion to its cost and complexity. The Maintenance alternative providing the least benefits, the Reconstruction, Arterial, Inboard and Outboard alternative each increasing such benefits over the other, respectively. Because the economy of the New York Region is heavily dependent upon the Manhattan CBD, the Region would share whatever adverse impacts affect Manhattan.

Within the Study Corridor, most industries either involve trucking or are dependent upon transportation services. Thus, the Inboard and Outboard alternatives, which would improve general accessibility to the West Side, would also provide the most benefits. The Lower Manhattan office industry would particularly benefit from the transit elements of the Arterial, Outboard and Inboard alternatives. Other industry might benefit from a reorganization of their operations, for example the meat market under the Outboard alternative, or from the consolidation of their operations, for example, the cruise ship portion of maritime activities, the freight forwarding portion of the trucking industry and the railroads.

Short-term and long-term adverse impacts would be created for businesses depending on truck parking areas under the elevated highway or in adjacent publicly-owned wharf space. The Outboard, Inboard and Arterial alternatives would eliminate such space. The Maintenance and Reconstruction alternatives would maintain such space.

Social

Overall, the Project alternatives would influence but not directly cause short-term and long-term impacts on Corridor characteristics, in terms of trends in population, employment, housing and the provisions of public facilities and services. The trends would be stimulated in the short and long term by the Arterial, Outboard or Inboard alternatives. The most significant

potential long-term effect is the redistribution of population, and public facilities and services depending on City policy toward the development of land which would be created by the Outboard alternative. The Maintenance and Reconstruction alternatives would reinforce the retention of current land uses in their present locations.

The Maintenance and Reconstruction alternatives would perpetuate the existing negative impacts on the West Side that are attributable to an elevated highway structure that forms a physical barrier between adjacent communities and the waterfront, and that inhibits new development or redevelopment of the area.

The Arterial alternative would have short-term and long term beneficial impacts, through the removal of the elevated highway and replacement with a new roadway and transit facility. Short-term and long-term redevelopment along the West Village waterfront and other areas of the Corridor would depend upon development and redevelopment policies of the City, particularly for off-shore areas no longer needed for maritime purposes.

The Inboard alternative would allow for more orderly redevelopment by virtue of the extended period of time for project implementation. Improved access to the waterfront south of 14th Street, expanded recreational and open space areas, incentives for new housing development in the West Village and improved environmental conditions would be long-term benefits.

The Outboard alternative also would allow for orderly development and redevelopment over the long term, with an emphasis on the opportunity for developing housing, parks, open space and community facilities on the newly created land. The opportunity for long-term benefits is substantial, depending on the development policies and programs which would have to be developed over time if the Outboard is selected for implementation.

The physical separation of the waterfront from the local communities, perpetuated by the Maintenance and Reconstruction alternatives, would be adverse and unavoidable over the long term. The limitation on new development and redevelopment would inhibit achieving city and community goals, except in the Chelsea area where the goal of revitalized maritime activities is desired. No alternative would significantly assist in attaining that goal.

Parks, Open Space and Recreation

The alternatives would have impacts ranging from no effect to substantial improvement over the existing conditions. Overall, the alternatives with the greatest short-term adverse impacts are the ones which would create the greatest long-term benefits. Conversely, the alternatives with the least short-term adverse impacts would also create the least long-term benefits.

The long-term beneficial effect of the Outboard and Inboard alternatives, respectively, would be to improve the amount, quality and availability of needed open space and recreational areas on the West Side. These alternatives would substantially change the physical configuration of the waterfront, creating opportunities for developing new waterfront parks and recreation areas.

The Reconstruction and Arterial alternatives, although not significantly increasing the amount of open space, would provide for the relocation of an existing park in a more desirable and useful location. The Maintenance alternative would not physically alter the waterfront or existing open space and park land.

The Maintenance, Reconstruction and Arterial alternatives would have long-term adverse impacts, to the extent that they would perpetuate the physical separation of the adjacent communities from the waterfront area. They also would have the effect of perpetuating open space, park and recreational areas where short and long-term impacts of noise and air quality would be most severe.

Short-term unavoidable impacts on open space, parks and recreational areas would occur during the construction period for all alternatives. The short-term effects would be most severe for the Outboard alternative, somewhat less for the Inboard alternative and least for the Reconstruction, Arterial and Maintenance alternatives. The short-term adverse impacts could be mitigated but not eliminated by providing temporary replacement space and temporary access.

The short-term and long-term adverse impacts on aesthetics or the visual environment would be most severe for the Maintenance and Reconstruction alternatives. The short-term and long-term effects of the Arterial alternative would be substantially improved. The Inboard alternative would have short-term adverse aesthetic impacts throughout the Corridor, but would have long-term benefits, except for the area north of 14th Street. The Outboard alternative would have short-term adverse aesthetic impacts throughout the Corridor during the construction period, but would provide the greatest long-term benefits.

None of the alternatives would irreversibly commit resources to the extent that potential development of future open space and recreational areas would be prevented. The Outboard and Inboard alternatives, respectively, would actually create the beneficial space. The Maintenance, Arterial and Reconstruction alternatives would not prevent the future development of waterfront open space, park and recreational areas, but all would inhibit such development.

The Physical Environment

Air Quality

The implementation of any of the five alternatives would have neither beneficial nor adverse long-term effects of significance on air quality from a regional standpoint. Regional emissions of hydrocarbons and nitrogen oxides are expected to decrease substantially in the future as a result of emission control regulations on motor vehicle manufacturers, as promulgated by the United States Environmental Protection Agency. The existing regulations and those which evolve in the future will be the controlling factors.

Within the New York Region, the Manhattan CBD and the West Side Study Corridor, the short-term effects on air quality would be a function of the officially approved Air Quality Implementation Plan and any future changes in its transportation control strategies. In the long-term, the effects would result from a number of factors, including emission control regulations on motor vehicle manufacturers, the amount and distribution of population and employment, the amount and quality of public transportation, City development and redevelopment policies with emphasis on the amount of parking space available, and particularly controls on trucking and truck traffic.

The alternatives would have varying degrees of beneficial and adverse effects on the amount of carbon monoxide in the air within the Corridor. At a predicted level of traffic in the future, assuming only the continuance of parking controls, the Outboard and Inboard alternatives, respectively, would have the most beneficial effects on air quality from a standpoint of carbon monoxide. This would result from the diversion of traffic, particularly trucks, from the local street system and the mechanical ventilation of the covered sections of highway. Thus the Outboard and Inboard alternatives would have the least adverse impact on air quality in the long-term for the areas immediately adjacent to the highway, as well as the Study Corridor impact area.

In general, the Arterial alternative would create conditions which would result in the most adverse carbon monoxide impacts throughout the Corridor, although the impacts would vary from site to site. The Arterial alternative is followed respectively by the Reconstruction and Maintenance alternatives in degree of adverse impact, again depending upon specific sites.

Water Quality

No alternative would have a major long-term impact on the water quality of the Hudson River, although there would be a contribution to water quality improvement in the long term by the Outboard and Inboard alternatives, respectively.

In the short-term, adverse impacts would be caused during the construction phase by the Outboard and Inboard alternatives, although these would be mitigated by controls on construction methods and equipment.

The Outboard alignment would reconfigure the West Side shoreline, providing a smooth edge, consequently improving flow rates and dispersion of pollutants. Siltation would be retarded along the waterfront and the marine habitat would benefit from improvements in dissolved oxygen levels, thereby supporting more varieties of estuarine species.

Although the Inboard alternative would retain some finger-pier structures, partial smoothing of the shoreline in the expanded inter-pier basins would provide some long-term benefits. Both of these alternatives would relocate and improve existing sewer outfalls, improving flow rates and pollutant dispersions.

The Maintenance, Reconstruction and Arterial alternatives would have no significant impact, either positive or negative, upon water quality. The primary factor adversely affecting the water quality is the City's combined storm and sanitary sewer system. None of the alternatives would directly affect this fundamental problem.

The unavoidable adverse impact caused by automotive-source water pollution in the form of highway run-off is virtually insignificant, considering its percent contribution to the total street run-off of Manhattan's West Side and the existing problem of occasional untreated discharges into the Hudson.

The Project alternatives would not cause any irreversible commitments of resources adversely affecting the long-range options for improving the quality of the Hudson River.

Noise

Prediction of future noise levels in the West Side Study Corridor, and comparison with existing noise levels, indicate that noise reductions would be achieved in the long term in certain areas. However, the reductions would result primarily from the noise emmission characteristics of vehicles. Future noise levels, considered both short-term and long-term adverse impacts, would be significant for any alternative. Existing and predicted future noise would result in levels above Federal Highway Administration standards, which are established uniformly for both urban and rural areas.

In general, the Outboard alternative would result in the least long-term adverse impact, primarily because of long sections of the highway and transitway which are covered and ventilated. This alternative is followed in least long-term adverse impacts by the Inboard alternative for most of its length from the Brooklyn-Battery Tunnel to 14th Street.

The Maintenance alternative, primarily because it would provide for no truck traffic on the highway facility, would have the least adverse noise impact in the immediately adjacent areas. The Reconstruction and Arterial alternatives, respectively, would have the most severe long-term adverse noise impacts in the immediately adjacent areas.

For each alternative except Maintenance, abatement measures would be undertaken to either correct or minimize adverse noise impacts in most areas. However, exceptions to compliance with noise standards would be requested for those adversely impacted sensitive sites where there is no practical or feasible way to overcome noise levels above standards.

Short-term adverse impacts would primarily result during the construction phase of any alternative. Noise from construction, regardless of alternative would be required to meet the limits of the New York City noise code. The alternatives which require the greatest amount of construction and the longest construction period would have the greatest short-term adverse impacts. These would be, in order the Inboard, Outboard, Arterial with transitway and Reconstruction, and the least adverse impact would result from merely repairing and re-opening the existing West Side Highway.

Energy
There is no significant difference among alternatives in the irreversible or irretrievable commitment of energy resources. The maximum difference in energy consumption within Manhattan for any alternative is within one percent of the Maintenance alternative.

The commitment of energy resources for the exclusive busway transit option would be offset by a nearly equal savings in energy consumption, through the diversion of less energy-efficient auto passenger trips to the new bus system.

The commitment of energy resources for the rail transit option would be 1.227 billion BTU annually. However, only 21 percent of this would be returned in savings through diversion of auto passenger trips to the rail system.

Relocation

Housing, Business and Industry
The relocation of private and public properties under normal circumstances is invariably an adverse social and economic impact. The exception may occur when present conditions are undesirable and unacceptable. In those instances, relocation may provide the opportunity to create more desirable and beneficial conditions. The relocation of some commercial activities on the West Side from deteriorating structures to improved buildings and facilities could have a beneficial impact.

The short-term adverse impacts would include the disruption of social relations, unrecoverable indirect costs, and the inconvenience of changing living patterns and routines. Most such impacts are unavoidable, and have been minimized by selecting alternative locations which would require the fewest displacements. A long-term adverse impact might occur in a few instances where business activities could not be relocated satisfactorily, resulting in eventual business closings.

The Maintenance and Arterial alternatives would not cause any displacement of homes or commercial properties. The Reconstruction alternative would displace four buildings and relocate 13 commercial enterprises. The Outboard alignment, with a two-corridor interchange at the Holland Tunnel, would take a total of 47 buildings, causing the displacement and relocation of 89 families and 73 commercial enterprises. This alternative would displace 23 commercial tenants from the piers. The Outboard, with a single-corridor interchange at the Holland Tunnel, would displace 49 buildings, and necessitate the relocation of 96 families and 83 commercial enterprises.

The Inboard alternative, with a two-corridor interchange at the Holland Tunnel and a 30th Street corridor interchange at the Lincoln Tunnel would require 58 buildings (tenements, garages, lofts, warehouses), and would relocate 130 families and 88 commercial enterprises. In addition, there are 18 commercial tenants in the pier areas that would be relocated. The Inboard alignment with a single corridor interchange at the Holland Tunnel and a 35th Street interchange for the Lincoln Tunnel would take 51 buildings (tenements, garages, lofts, warehouses), and displace 190 families and 74 commercial enterprises. It also would remove 21 commercial tenants from the piers.

Public Facilities and Utilities
The probable impacts on public facilities and utilities would be virtually all short-term, unavoidable and adverse, with only a few exceptions. Benefits would accrue to those public facilities which are outmoded and presently limited in space and accessibility, and which would be replaced as part of the implementation of the alternative.

Specifically, a long-term benefit of the Outboard and Inboard alternatives would be the functional replacemnt of the municipal Gansevoort incinerator with a more efficient and cleaner solid waste disposal facility. The existing incinerator plant consists of relatively obsolete technology generating substantial air pollution which is of concern to the local community. In addition, the Outboard alternative, and to some extent, the Inboard and Arterial alternatives, would facilitate the planned installation of a new 72-inch distributron water main under West Street-Twelfth Avenue by the City.

The short-term unavoidable and adverse impacts would result from the necessity for relocation and disruption of a myriad of underground utilities. The Maintenance and Reconstruction alternatives would have the least short-term adverse impact. The Arterial alternative with a transitway would be more disruptive. Both the Outboard and Inboard alternatives would involve major relocation of utilities.

Aside from the physical acquisition of space required for the new transportation facilities, the Project alternatives would not irreversibly commit resources which would forecloze future utility installations or public facility operations in the Corridor area.

In order to keep disruption and interference to a minimum, the following construction methods would be used for the extensive utility relocations anticipated for the Inboard and Outboard alternatives. First, existing sewer service would be maintained, except for the period necessary to interconnect the new relocated section with the existing system. This operation could be scheduled for the hours of least utility use. Second, the high and low pressure water mains would be kept in service at all times. The interconnection between the existing and the relocated sections could be made without interruption of service, by tapping under pressure. Third, the relocation of the air conditioning facilities at the World Trade Center could be started in the summer months and interconnections made during winter months, when air-conditioning facilities would not be in use.

Construction

The actual construction of a selected alternative would create temporary or short-term adverse impacts —the majority of which would be unavoidable. The adverse environmental effects would not all occur simultaneously in any one alternative, but would be spread over a considerable period of time. To the extent that a particular alternative would include construction work, the generation of jobs and income would be a short-term benefit.

During construction, traffic along the West Side waterfront would be disrupted. Construction techniques would require the movement of materials and debris, and the operation of equipment which would generate noise and dirt. These short-term impacts would be minimized by specifying particular techniques, scheduling and incorporating the most advanced environmental safeguards during operations. Despite these efforts, some adverse impacts would be unavoidable.

In terms of noise and air pollution, the Inboard alternative would have the most substantial construction impact. The Arterial alternative would be next in severity, followed by the Outboard and Reconstruction alternatives. The Maintenance alternative would have the least impact. The Inboard, Arterial and Outboard alternatives would require the complete demolition of the existing West Side Highway, resulting in disruption of traffic and a minimal deterioration of air quality on the streets where this traffic diversion would occur.

Water pollution caused by disruption to bottom material during pier removal and dredging would occur prior to landfill operations, as well as possible increases in suspended solids resulting from placement of the landfill itself. These short-term unavoidable adverse impacts would be associated only with the Inboard and Outboard alternatives.

The construction requirements for manpower, materials, and energy resources required to build a particular alternative would represent an irreversible commitment of resources, which would otherwise be available for other purposes. The irreversible commitment of resources would range from small amounts for the Maintenance alternative to very large amounts for the Inboard and Outboard alternatives.

The commitment of manpower, while considered an economic benefit to the New York Region for the short-term, could not be retrieved once committed. The estimated number of man-years for each alternative is 1,200 for Maintenance, 3,500 for Reconstruction, 4,000 for the Arterial, 15,000 for Inboard, and 20,000 for Outboard.

Although there would be some long-term salvage value from the materials used in any alternative, these would be slight, and the utilization of most materials must be considered an irreversible commitment of resources. The quantities and types of materials needed range widely from very small amounts to merely repair and re-open the existing Highway to major amounts of materials for the Inboard and Outboard alternatives, as detailed in the West Side Highway **Design Report**. Among the most important materials are steel and concrete. The tons of required steel estimated for each alternative are 60,000 for Inboard, 34,000 for Outboard, 40,000 for Reconstruction, and 7,000 for Arterial. No estimate was made for the tons of steel to do nothing but repair the existing Highway, pending completion of a detailed inspection. The estimated cubic yards of concrete for each alternative are 180,000 for Outboard, 100,000 for Inboard, 50,000 for Reconstruction, and 1,000 for Arterial. No estimate was made for just repairing the existing West Side Highway.

Conclusion

This summary of the probable beneficial and adverse effects of each alternative, and the more complete descriptions contained in other sections of the Statement, point up the complexity of the problems and issues which confront all participants in the decision-making process for the West Side Highway Project.

The five alternatives which have been presented here for consideration offer a wide range of possible actions and, therefore, a similarly wide range of potential impacts on the West Side and Manhattan. No single alternative can be shown to be beneficial in every category of social, economic and environmental effects. Nor can any one alternative be shown to respond positively and fully to the Goals and Policy Statements adopted by the Steering Committee at the outset of this planning process.

Consequently, the Environmental Impact Statement emphasizes the fact that making choices in order to provide optimum future conditions within the West Side Study Corridor will necessarily and properly reflect the balancing of various competing values.

Costs

Detailed cost estimates have been prepared for each of the alternatives. The Inboard and Outboard alternatives were estimated from the Brooklyn-Battery Tunnel to the vicinity of 42nd Street, while the Arterial, Reconstruction and Maintenance were estimated from the Brooklyn-Battery Tunnel to 72nd Street.

The costs were determined by estimating quantities of the major items of work required for each alternative, and applying current unit costs to those items. Major items of work include: excavation, dredging, embankment, stone fill, sand drains, riprap, pre-stress and pre-cast piles, concrete, pre-stressed concrete beams and structural steel. Added to this base cost was approximately 25 percent for mobilization, surveys, engineering and contingencies for the alternatives including an interstate facility, and 30 percent for the Reconstruction and Arterial alternatives.

Items of work required for the Reconstruction alternative were based upon assumptions of the numbers of beams, stringers, and steel bents which would have to be replaced. The assumptions have been made with the assistance of the New York City Department of Highways. They do not represent the findings of a detailed inspection of the structure.

The costs of the Outboard, Inboard, Arterial and Reconstruction alternatives were developed by the Project staff. The estimate for repairing the existing structure to operational standards, the Maintenance alternative, was developed by the City and State of New York. More details on costing procedures and unit costs is found in the **West Side Highway Project Design Report**, and the **Manhattan West Side Corridor Transit Study Technical Report.**

Right-of-way estimates for each of the alternatives have been prepared by the Real Estate Division of the New York State Department of Transportation. Based upon the plans for each alternative, the potential impact on affected properties was estimated. Where a partial impact of the facility on a particular property occurred, the percentage of damage was established. The market value of the property affected was estimated, to which the following items have been added: interest for one year from taking title, appraisal costs, a condemnation factor of 12 percent, and miscellaneous costs such as title abstracts and relocation assistance.

Three of the alternatives: Arterial, Inboard and Outboard, include transit systems. Costs for the transitways were developed for the Manhattan West Side Corridor Transit Study using the same methodology described above. The three highway-transit alternatives have been designed to accommodate either a busway or a rail system. In addition, the busway has been designed to be convertible to rail.

Highway Construction and Right of Way Costs
In millions of dollars

Alternative(a)	Battery–42nd Street		42nd–72nd Streets		Total	
	Construction	Row	Construction	Row	Construction	Row
Maintenance	56	0	30	0	86	0
Reconstruction	148	8	79	4	227	12
Arterial	45	0	31	0	76	0
Inboard (I_1)	887	55			887	55
Inboard (I_2)	909	73			909	73
Inboard (I_3)	894	56			894	56
Inboard (I_4)	916	75			916	75
Outboard (O_1)	1139	102			1139	102
Outboard (O_2)	1174	111			1174	111
Outboard (O_3)	1136	129			1136	129
Outboard (O_4)	1165	85			1165	85

(a)
I_1 Lincoln Tunnel interchange at 30th Street, and transitway in Eleventh Avenue
I_2 Lincoln Tunnel interchange at 35th Street, and transitway in Eleventh Avenue.
I_3 Lincoln Tunnel interchange at 30th Street, and transitway in Twelfth Avenue
I_4 Lincoln Tunnel interchange at 35th Street, and transitway in Twelfth Avenue.
O_1 Lincoln Tunnel interchange at 30th Street, and transitway in Eleventh Avenue
O_2 Lincoln Tunnel interchange at 35th Street, and transitway in Eleventh Avenue
O_3 Lincoln Tunnel interchange at 30th Street, and transitway in Twelfth Avenue
O_4 Lincoln Tunnel interchange at 35th Street, and transitway in Twelfth Avenue

Transitway Construction and Right of Way Costs
In millions of dollars

	WTC(a) to 22nd Street		22nd to 42nd Street		42nd to 72nd Street		Balance of System		Total	
	Transitway	Row	Transitway	Row	Transitway	Row	Transitway	Row	Transitway	Row
Express Bus										
Outboard 11th Ave.	$ 213	(a)	$ 63	$ 7	$ 19	$ 11	$ 155	$ 6	$ 450	$ 24
Outboard 12th Ave	207	(b)	53	(a)	116	2	155	6	531	8
Inboard 11th Ave.	155	(b)	69	7	19	11	155	6	398	24
Inboard 12th Ave	158	(b)	62	(a)	116	2	155	6	491	8
Rail Transit										
Arterial 11th Ave	194	(b)	156	17	156	17	754	11	1104	28

(a) World Trade Center
(b) Right of way costs included in construction costs for this alternative

For the purposes of this section, the busway has been included in the Inboard and Outboard alternatives, and the rail system has been incorporated into the Arterial alternative.

The proposed transitways would extend beyond the Project study area. Construction of both transitway and highway would be concurrent along the length of the transportation corridor. The express bus system proposed as part of the Inboard and Outboard alternatives would extend from the World Trade Center to near the George Washington Bridge, although the highway facility would go north only as far as 42nd Street. The proposed rail transit line, included as part of the Arterial up to 42nd Street, would extend from the World Trade Center to the George Washington Bridge, where it would cross Manhattan into the Bronx and extend north to Van Cortlandt Park. A branch line would extend along 145th Street across Manhattan to the Grand Concourse in the Bronx. The rail system also includes connections to the existing New York City subway system at 14th and 41st Streets.